

**5TH ANNUAL
NEW YORK HARBOR
SCHOOL
MARINE SCIENCE
SYMPOSIUM MAY 18, 2016**

Picture provided by: Julia Montilla and Grace Carter

MARINE BIOLOGY / SCIENCE RESEARCH PROGRAM

SCIENCE SYMPOSIUM

PROGRAM

10:00 AM	Poster Board Set-Up in Hallways	All Marine Research Students
11:00 AM	10 th Grade Judging	Marine Research Seniors
12:00 PM	11 th and 12 th Grade Judging	Adult Volunteers
03:00 PM	Students Move Posters to Mess Hall	All Students
03:20 PM	Lunch	Students in 320 Adults in Mess Hall
03:45 PM	Report to Mess Hall	All
04:00 PM	Introduction and Welcome	Dr. Jeffrey Chetirko, NYHS Principal
04:00 PM	Introduction of Keynote Speaker	MCs
04:10 pm	Keynote Address	Charlie Fitzpatrick, Schools Program Manager, Esri
04:30 PM	Introduction of Student Speakers	MCs
04:32 PM	Can Ecovative's Mushroom Material Serve as an Effective Substitute for Styrofoam?	Luca GoldMansour NYHS, Class of 2016
04:45 PM	Oyster Restoration Genetics	Cezanne Bies and Zain Bin Khalid NYHS, Class of 2016
04:55 PM	Awards Ceremony	Presented by Mauricio González
05:35 PM	Closing Remarks	Mauricio González & MCs
06:00 PM	Ferry Departs to Manhattan	

MARINE BIOLOGY RESEARCH PROGRAM STUDENTS AND PROJECT TITLES

Seniors

Project Titles

Bies, Cezanne

Oyster Restoration Genetics

Bin Khalid, Zain

Oyster Restoration Genetics

Carrasquillo, Ivan

GIS

Coxin-DeJesus, Tyler

3D Modeling: The Next Generation of Creation

Dominique, Aliyah

GIS: Habitat Destruction Prevention

Giraldo, Maria

Chestnut Trees

GoldMansour, Luca

Can Ecovative's Mushroom Material Serve as an Effective Substitute for Styrofoam?

Gutierrez, Graitchell

The Importance of Arts Education In School

Jiminez, Marc

Monitoring Atmospheric Carbon Dioxide

Montilla, Julia

Chestnut Trees

Torres, Edgar

Creating Ideal Conditions in a Recirculating System for Black Mollies

MARINE BIOLOGY RESEARCH PROGRAM STUDENTS AND PROJECT TITLES

Juniors

Project Titles

Carter, Grace	Back to Basics: A Baseline Study of Macroinvertebrates at Pier 101
Conklin, Katherine:	Harlem River Phytoplankton
Gathers, Mariah	GIS on Mapping Conservation Biology
Isodoro, Cindy	Effects of Compost and Compost Tea on Radish Plants Growth
Mendez, Salma	GIS Lesson 10
Rosin, Jared	The Biodiversity of Macroinvertebrates within Pier 101, Governors Island
Scott, Kaila	Carbon Mapping the U.S.A.
Smith, Melanie	Discovering the Unknown: A Baseline Study of the East and Harlem Rivers
Valentin, Bella	How to Take Care of an Aquatic Ecosystem Model
Wiemer, Erik	Biodiversity of Invertebrates within the Upper New York Bay

MARINE BIOLOGY RESEARCH PROGRAM STUDENTS AND PROJECT TITLES

Sophomores

Project Titles

Alavarenga, Angie

Bell, Christopher

Bloom, Phillip

Social Engineering: The Neglected Human Factor for Information Security Management

Charles, Marcus

Chiu, Matthew

Polymorphism in a Serine Protease Inhibitor Gene and its Association with Disease Resistance in the Eastern Oyster (*Crassostrea virginica Gmelin*)

Hing, Kiyoshi

Mena Rodriguez, Zen

Moataz, Zakariya

Oliver, Juilien

Use of Multiple Orientation Cues on Juvenile Loggerhead Sea Turtles *Caretta caretta*

Ring, Nicholas

Rivera, Seth

Cleaning the Harbor: A Method to Cleaning the Mess

Rodriguez, Nailea

Restoring the Harbor, Invertebrate by Invertebrate

Safy, Rena

Tacuri, Andres

The Life of an Aquatic Ecosystem Model

Taylor, Malik

Torres, Isabella

Cleaning the Harbor: A Method to Cleaning the Mess

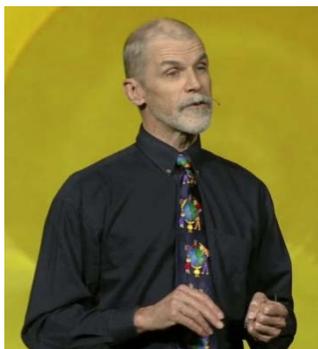
Vittore, Jared

Cleaning the Harbor: A Method to Cleaning the Mess

Zhu, Tony

The Effect of Cosmic Rays on Cloud Cover

KEYNOTE SPEAKER



Charlie Fitzpatrick is a Schools Program Manager for *Esri*, maker of the industry standard GIS software. Charlie gets to work with students, teachers, education leaders, and politicians across the U.S. about using GIS for instruction in schools, including *Esri's* offer of free GIS software to any US K-12 school. That work includes making maps, writing blogs, doing trainings, giving presentations, and telling software teams what works and doesn't in schools. Before jumping to *Esri* in 1992, Charlie taught social studies for 15 years in grades 7-12 (mostly 8th grade geography), and helped teachers learn to use technology. When not playing with maps and computers, he can be found diving around tropical coral reefs. He has a Master's degree in Geography.

SENIOR ABSTRACTS



Cezanne Bies

Project Title: Oyster Restoration Genetics

Mentor: Professor Matthew Hare, Cornell

Abstract: Bacterial contamination, over harvesting, pollution, and sewage overflows have depleted the Eastern Oyster population. (Munoz, et al. 2010). Many restoration projects are using wild oysters to replenish the decreasing supply; however, these projects lack enough scientific data to allow for comparison of the growth performance and phenotype for the different spats and their spawning methods. In this study, oyster growth performance was compared between mass and Individually spawned Eastern Oysters, (*Crassostrea virginica*). The process was performed by measuring the size and mortality of both spats over the span of 4 weeks, and physical chemistry data was collected and analyzed at the site to determine if there were any environmental disturbances present in the water. If two wild spats of *Crassostrea virginica* are produced with different spawning methods and compared using growth performance and mortality as measures, then the individually spawned oyster group will exhibit faster growth rate and have less mortality. After conducting three statistical analyses, the performance between the mass and Individual spawning methods were found to have a significant difference. Physical chemistry did not appear to significantly alter the growth and mortality patterns of the oysters. Mass-spawned Eastern Oysters were found to have better growth and mortality patterns.

Biography: Cezanne Bies is a Senior attending the New York Harbor School. In the past 3 years she has studied both genotypical and phenotypical aspects of New York's variation of Eastern Oyster, *Crassostrea virginica*. Cezanne also works for SEALS and CIVITAS as a data manager and a physical chemistry mentor for younger children. Some of her interests include discussions about the *Caulerpa taxifolia* invading European waters; how we can remove pollution from the Hudson River using oyster beds; how hydropower can replace fossil fuels; and she is a strong advocate of genetic engineering in animals. In the future, she hopes to achieve a Doctorate degree in the field of genetics and study the migration routes of Colossal Squid, *Mesonychoteuthis hamiltoni*.



Zain Bin Khalid

Project Title: Collection of Plastic Debris within the Upper New York Bay

Mentor: Rachael Miller, co-founder of the Rozalia Project for a Clean Ocean

Abstract: Bacterial contamination, over-harvesting, pollution, and sewage overflows have depleted the Eastern Oyster population (Munoz, et al. 2010). Many restoration projects are using wild oysters to replenish the decreasing supply; however, these projects lack enough scientific data to allow for comparison of the growth performance and phenotype for the different spats and their spawning methods. In this study, oyster growth performance was compared between mass-spawned and individually spawned Eastern Oysters, *Crassostrea virginica*. The process was performed by measuring the size and mortality of both spats over the span of 4 weeks, and physical chemistry data was collected and analyzed at the site to determine if there were any environmental disturbances present in the water. If two wild spats of *Crassostrea virginica* are produced with different spawning methods and compared using growth performance and mortality as measures, then the individually spawned oyster group will exhibit faster growth rate and have less mortality. After conducting three statistical analyses, the performance between the mass and Individual spawning methods were found to have a significant difference. Physical chemistry did not appear to significantly alter the growth and mortality patterns of the oysters. Mass-spawned Eastern Oysters were found to have better growth and mortality patterns.

Biography: Zain is currently a Senior at the New York Harbor School, where he conducts research and volunteers as a the Director of Operations for Harbor SEALS, a group of citizen scientists who monitor the water quality of the Hudson River estua

ry. He has been an exemplary intern with The Port Authority of NY/NJ and with a local tugboat operations company. Zain intends to study marine biology and pursue emergency medicine as a career.



Ivan Carrasquillo

Project Title: GIS

Mentor: Mauricio Gonzalez

Abstract: GIS is an acronym for Geographic Information System and it's a system designed to store, manage and present all types of spatial and/or geographical data. In this project I will discuss what GIS is, its uses and how it works in the real world. This information was obtained from the GIS STEM book, a beginner's guide to GIS, and the different maps that were created. GIS is a branch of geospatial technology that's primary benefit is the ability to turn layers on and off, so instead of looking at multiple paper maps you can look at one map with multiple layers that represents multiple sets of data. GIS has a huge future outlook for jobs because jobs that usually had nothing to do with GIS are increasingly relying on it to help make decisions. GIS is very underrated and should be brought into light.



Tyler Coxin-DeJesus

Project Title: 3D Modeling: The Next Generation of Creation

Mentor: Mauricio Gonzalez, New York Harbor School

Biography: What is creation? Creation is all around us. It's in the things we see, in the things we imagine, our dreams and fantasies, as well as our reality. 3D Modeling is a furthering of creation, the capability to create simply.



Aliyah Dominique

Project Title: GIS: Habitat Destruction Prevention

Mentor: Mauricio Gonzalez, New York Harbor School

Abstract: Many home, roads and building are being constructed around us. These new changes can be good but also can weaken the animals that are living in the areas we are building on. They have become threaten to leave their habitats as we begin take over. Using GIS will benefit conservation biology. Conservation biology is to insure that plants and animals don't become extinct. Many of the animals and plants that you see today won't exist anymore if we do not take action in take action in preserving animal habitats.



Maria Giraldo

Project Title: Chestnut Trees

Mentor: Bart Chezar, Joseph Charap

Abstract: The American Chestnuts are about to be extinct because the trees are having a problem with blight. This blight is a disease, and its caused by an Asian Bark fungus. It was introduced to America by imported Asian Chestnut trees that now are destroying American Chestnut population. The disease first affected the trees in the Zoological park and then it moved to the Bronx in New York. This blight has infected about 98 percent of the trees in the Bronx. The disease has killed more than three million trees. Chinese Chestnuts developed stronger roots and they resist more than the American Chestnuts trees.



Luca GoldMansour

Project Title: Can Ecovative's Mushroom Material Serve as an Effective Substitute for Styrofoam?

Mentor: Sue Van Hooke, Chief Mycologist at Ecovative

Abstract: Using mycelium, which is the vegetative growth of fungus, as well as corn husk, Ecovative Design® has developed a biodegradable substance as an ecologically friendly substitute for styrofoam. Styrofoam has been proven to encompass a large portion of the widespread plastic litter throughout the northwestern Atlantic Ocean (Colton, Knapp, & Burns, *et al.* 1974). All plastic, including styrofoam, photodegrades into carcinogenic microplastics that are ingested by marine animals (Andrady, *et al.* 2011). Reducing the concentration of styrofoam polluting the world's oceans, through the utilization of the mushroom material (M.M.), would begin to relieve the stress of a great ecological burden. One specific intended use of the M.M. is as fishing buoys. This study determined the water quality effects of the M.M. Ecovative© would be ineffective in its aim of benefiting the marine environment if the M.M. causes certain water quality parameters to exceed or fall below established tolerance levels. Specifically, this project's goal was to determine the M.M.'s effects on pH, temperature, salinity, and dissolved oxygen. Through monitoring two experimental water tanks with a M.M. buoy, and one control tank without any M.M., it was determined that Ecovative's M.M. has no effect on all of the water quality parameters mentioned above. The level of certainty varies for each of these parameters, though. Based on a statistical t-test, there is a 99.5% chance that the M.M. has no effect on dissolved oxygen or salinity, and a 99% chance that M.M. has no effect on temperature.

Biography: Luca GoldMansour, is a Senior in the Marine Biology Research Program at the New York Harbor School on Governors Island. In addition to formulating and implementing an independent research project through the MBRP, he is a research intern in the Science Research Mentorship Program (SRMP) at the American Museum of Natural History. Some of Luca's hobbies include skateboarding and stargazing. In the fall, I will begin my studies at the Eberly College of Science at Penn State University 😊.



Graitchel Gutierrez

Project Title: The Importance of Arts Education In School

Mentor: Mauricio Gonzalez

Abstract: After recent budget cuts within the DOE, many schools have shut down their arts programs because of lack of funding. The elimination of arts programs within schools has also lead to the drop in students' grades and productivity levels. This study was created to help educate and inform people as to the importance and significance of arts education within schools (primary, middle and secondary school) and its effect on the development and capacity of children (from infancy to adolescence).

Biography: Graitchell Gutierrez is soon to be a Freshman at Bradley University, majoring in English High School Education and Art History. I enjoy African American as well as Latino art history and am a strong supporter in arts education in school.



Marc Jimenez

Project Title: A Cause for Concern: Monitoring Atmospheric Carbon Dioxide on Governor's Island

Mentor: Mauricio Gonzalez

Abstract: The issue of climate change is one that has been studied since the early 19th Century. Climate Change, also called Global Warming, refers to the long-term change in the Earth's surface temperature. Among many other impacts, climate change is suspected for increased loss of ice sheet in Antarctica and Greenland; large drop in sea ice; rise in sea level as a result of ice melting; acidification of oceans as a result of increased carbon dioxide in the atmosphere; and reduced agricultural productivity and quality (Manabe & Wetherland, 1980). Carbon dioxide is the major greenhouse gas that absorbs and re-emits outgoing longwave radiation causing an increase of the Earth's heat content (Ruzmaikan and Byalko, 2015). Last year, Dr. Peter Tans at the NOAA/ESRL reported carbon dioxide levels reaching a record high concentration of 400 parts per million, numbers that have not been seen in millions of years. This project studies and monitors the amount of carbon dioxide in the atmosphere in hopes to understand the constant flux that occurs in the course of a year. To avoid error or bias in data, CO₂ concentrations were collected on two geographically distinct areas of Governors Island: Station 1, the Center of Governors Island, and Station 2 near the Upper NY Bay. Later on, a series of t-tests were conducted to analyze significant variation between the two stations. By the end, it was calculated with a 95% certainty that both stations had no significant difference in mean CO₂ concentration. It was found that the average amount of carbon dioxide had marginal fluxes all throughout the year, however there were no drastic increases or decreases. It is valuable information because it suggests that maybe there is still a chance to change Earth's fate. If there is more of a decline in the future, then maybe the earth can attain a climate safety reading of 350 ppm.

Biography: Accomplished Marine Biology Research Scholar, Marc competed in NYC's Science & Engineer Fair (NYSEF). He is graduating from the Urban Assembly New York Harbor School next month and is planning to attend Binghamton University this coming fall. Marc is considering majoring in Environmental Science, Business, Marketing or Biology.



Julia Montilla

Project Title: Chestnut Trees

Abstract: The American Chestnuts are about to be extinct because the trees are having a problem with blight. This blight is a disease, and its caused by an Asian Bark fungus. It was introduced to America by imported Asian Chestnut trees that now are destroying American Chestnut population. The disease first affected the trees in the Zoological park and then it moved to the Bronx in New York. This blight has infected about 98 percent of the trees in the Bronx. The disease has killed more than three million trees. Chinese Chestnuts developed stronger roots and they resist more than the American Chestnuts trees.

JUNIOR ABSTRACTS

Grace Carter

Project title: Back to Basics: A Baseline Study of Macroinvertebrates at Pier 101

Mentor: Dr. Alberto Stolfi – NYU Experimental Genetics Lab

Advisors: Mauricio Gonzalez

Abstract: This project is a baseline study to observe the biodiversity in the ecosystem and to compare different stations to provide a guide and a baseline for future researchers. If invertebrate DNA was extracted from the Upper New York Bay, sequenced, and analyzed with bioinformatics, then a better understanding of the biodiversity in NY could be gleaned, and in this way an accurate level of diversity could be realized. This may be in the form of a list of invertebrates present in the waters, or organized in some other way where the results are quantifiable. Given this, however, there is certainly a multitude of information having to do with diversity in general. There is, for instance, a study on biodiversity of freshwater macroinvertebrates in New York State (Department of Environmental Conservation, n.d.). While this is not quite the project proposed, it is certainly a good point to start from.

Katherine Conklin

Project title: Harlem River Phytoplankton

Mentor: Maura Smotrich, CIVITAS

Advisors: Mauricio Gonzalez

Abstract: The big issue that is going on in the Harlem River is that there might be a lot of phytoplankton, making it difficult for the oysters to filter them out. This project is to see how many different types of phytoplankton can be filtered out in one milliliter of water. Now the question that will be answered in this project would be: if there's an increase of phytoplankton will the river become unhealthy?

Mariah Gathers

Project title: GIS on Mapping Conservation Biology

Advisors: Mauricio Gonzalez

Abstract: Conservation Biology is the GIS lesson six topic. This lesson is mainly focused on the Bald Eagle which is an endangered species of bird. Throughout the lesson many new skills are to be acquired and learned focusing on using the ArcToolbox function. Skills such as clipping and buffering are used within this lesson and are a main component to completing this lesson. This is a prime example of GIS being used in the real world to solve problems. The lesson focuses on creating a zone where humans are not allowed to be. Such as where eagles have been sighted and where the eagles nests are located. Projects focused on conservation biology could help with the creation of many zones for flora and fauna to flourish without the involvement of humans to contaminate the zone. In the end many species that are endangered could potentially no longer be endangered and will in a sense be saved. GIS has the capability to determine the best possible location for these areas and could help change the way each species lives.

Cindy Isodoro

Project title: Effects of Compost and Compost Tea on Radish Plants Growth

Mentor: Marisa DeDominicis, Co-founder of Earth Matter

Abstract: According to the Environmental Protection Agency, in 2013 recycling and composting prevented 87.2 million tons of materials from being thrown away. Compost is made from organic waste such orange and banana peels, newspapers and the list continues. To create compost tea, compost is needed. Composting can decrease the amount of organic waste going away from landfills. Previous studies have shown compost does contain beneficial nutrients and minerals which plants need. In addition, compost tea may suppress soil-borne pathogens. What effect does compost and compost tea have on radish plants? The results of this project can give more information about compost and compost tea. If compost is added to pots with weekly compost tea applications then the radish plants will grow healthier since there are nutrients and minerals provided from these natural fertilizers. In 2015, compost tea applications were applied on two soil compacted areas, the results showed compost tea reduced soil compaction and an increase of macro organisms compared to the control section.

Salma Mendez

Project title: GIS Lesson 10

Advisor: Mauricio Gonzalez

Abstract: Purpose of this project is to show how GIS works. Ever wonder how to create a map. Be able to edit and create an Animation arc map. But also export animation to a file. With arc map tools we can edit and manage how an arc map is made. This is how we'll create in order to display an emission trends over time.

Jared Rosin

Project title: The Biodiversity of Macroinvertebrates within Pier 101, Governors Island

Mentor: Dr. Alberto Stolfi, NYU Brown Building

Abstract: This project is to observe the biodiversity of the Upper New York Bay. To be specific, my team and I were conducting genetic identification tests on what macroinvertebrates resides around Pier 101, Governors Island. We brought 27 specimens to a lab in NYU, to extract their DNA. In return we received 20 complete DNA strands. First, we collected specimens from Pier 101's Flooding Dock, Governors Island. Then we isolated the DNA; here a number of steps had to take place for us to get a pellet of DNA at the bottom of a test tube. Next, a process called gel electrophoresis was performed to see what DNA was extracted properly and that data is sent to another lab for sequencing were then the gathered Amino acid streams were put through bioinformatics testing and their closest matching organism is given to us. We could see from the data gathered that the New York estuary around Pier 101 actually possesses a healthy ecosystem considering its plentiful and diverse amount of life.

Kaila Scott

Project title: Carbon Mapping the U.S.A.

Mentor: Eymund Diegel- Gowanus Canal- Forensic Hydrologist

Advisor: Mauricio Gonzalez

Abstract: The map that I have created is in the form of a video slide show. It is there to show the process, over the years, of the amount of carbon in the United States. There are many layers in this map and many screen shots required. Over the years, the amount of carbon has increased, especially in the east part of the U.S.

Melanie Smith

Project title: Discovering the Unknown: A Baseline Study of the East and Harlem Rivers

Mentor: Maura Smotrich- CIVITAS, Esplanade Manager Kate Boicourt- NY-NJ Harbor and Estuary Program, Restoration Program Manager

Advisor: Mauricio Gonzalez

Abstract: The East River Esplanade is a popular place for locals to go for a walk or run along the East and Harlem Rivers, and experience the natural beauty that New York has to offer. However, the East and Harlem River ecosystem has little to no visible wildlife. In hopes of a future living shoreline, compared to the hard seawall that currently exists, a baseline study is necessary to monitor phytoplankton and benthic populations, species richness and biodiversity, and physical chemistry of the water. Four sites (three along the Harlem River and one at Pier 101 on Governors Island serving as the control) would be observed. This information would help in predicting ecological uplift, create an ongoing monitoring program of the area which could help determine the success of different construction materials with the increase of native populations. It is predicted that few organisms are currently able to thrive in the area, while in the past, numerous living organisms were able to flourish. With this year-long baseline study, students are able to better understand an ecosystem along Manhattan, as well as open the door for unique opportunities surrounding restorative efforts.

Erik Wiemer

Project title: Biodiversity of Macroinvertebrates within the Upper New York Bay

Mentor: Dr. Alberto Stolfi

Advisor: Mauricio Gonzalez

This project is meant to observe the different types of species – specifically aquatic macroinvertebrates – that occupy the Upper New York Bay off of Pier 101. Of 27 specimens sequenced, data from 20 were recovered – the other seven lacked adequate DNA to obtain proper data. The 20 specimens visually identified to the best of the researchers' abilities and then sequenced were shown to be aquatic macroinvertebrates that are commonly found in New England and the east coast of America more generally.

THE MARINE BIOLOGY RESEARCH PROGRAM WOULD LIKE TO THANK THE FOLLOWING PEOPLE FOR THEIR SUPPORT:

NYHS Parent/Teacher Association

Celia Baruchin	President
Theresa Case-Bandouveris	Vice President
Anna Lucena	Secretary
Adrienne Ferenczy & Angela Peterkin	Co-Treasurers
Janice Derow	Senior Parent at-Large
Raquel Morales & Detra Price-Dennis	Freshman Parent at-Large

NYHS Administrators + Support Staff

Dr. Jeffrey Chetriko	Principal
Aneal Helms	Assistant Principal
Ronni Ettinger	Parent Coordinator
Jessica Cuevas	NYHS College & Career Counselor
Jeremy Lynch	NYHS Dean of Students
Nellie Garrow-Coleman	Social Worker
Cadian Leys	Principal's Secretary
Pam Edwards	School Aide
Bev Means	School Aide
Marlon Scott	School Aide

New York Harbor Foundation

Murray Fisher	President and NYHS Founder
Matthew Haiken	Vice President, Administration
Robina Taliaferrow	Community Liaison & Operations Manager
Sam Janis	Billion Oyster Project, Project Manager
Pete Malinowski	Billion Oyster Project, Director

Guest Speaker

Charlie Fitzpatrick	Schools Program Manager, Esri
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Volunteers and Judges

Charlie Fitzpatrick	Esri and guest speaker
Jim Hall	DOE GIS Analyst and honored guest
Dave LaShell	Esri
Mike Judge	Manhattan College
Kathleen Nolan	St. Francis College
Celia Baruchin	Parent
Theresa Case-Bandouveris	Parent
Anita Morawski	Parent
Janice Derow	Parent
JoAnn Rodriguez	Parent
Alice Tse	Parent
Pam Bailey	Parent
Siri Kagan	Parent
Neal Phillip	Bronx Community College
Ronni Ettinger	Parent Coordinator NYHS
Murray Fisher	NY Harbor Foundation

Sam Janis
Maura Smotrich
Michael Kessler
Matthew Haiken
Camissa Cochrane-Peart
Noemi Rivera
Bart Chezar
Sam Ng
Jessica Cuevas
Katie Mosher-Smith
Jeremy Lynch
William Echavarria
Jeff Gilbank

Billion Oyster Project
CIVITAS
ConEd
NY Harbor Foundation
ConEd
St. Francis College
Indy Citizen Scientist
ConEd
NYHS College & Career Counselor
NY Harbor Foundation
NYHS Dean of Students
St. Francis College
Family Volunteer

Mentors/Advisors

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Ms. Angela DeRoberts
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Mr. Sam Janis
Dr. Michael Judge
Mr. Matthew Leahey
Ms. Andrea Lieske
Ms. Rachel Miller
Dr. Shimrit Perkol-Finkel
Dr. Ido Sella
Mr. Steven Schott
Dr. Alberto Stolfi
Dr. Sue Van Hooke
Mr. Peter Zdrojewski

Indy Citizen Scientist
Earth Matter
PAC
Cornell University
Billion Oyster Project
Manhattan College
SeaSavers Inc.
Earth Matter
Rozalia Project
SeaARC
SeaARC
Cornell Extension
New York University
Ecovative©
Island School

Thank you to the entire Urban Assembly New York Harbor School
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